UiT

NORGES ARKTISKE UNIVERSITET

PROGRAMME DESCRIPTION

Master of Science in Biomedicine

120 ECTS

Tromsø

The programme description is approved by the Faculty Board at the Faculty of Health Sciences dd.mm.2019

Table of contents

Study programme name

Bokmål: Biomedicine - master
Nynorsk: Biomedicine - master
English: Biomedicine - master

Degree obtained

Master of Science in biomedicine

Target group

This programme is designed for students who wish to acquire advanced knowledge and primary research skills in human biology and biomedical issues, including specialized technical laboratory skills related to modern cell and molecular biology research activities. The Programme is a continuation of the education for students with a completed bachelor degree in biomedicine, or who have a comparable educational background from a university or other institutions of higher education, aiming for careers in research and development, management or teaching.

Admission requirements

Admission to the programme requires a 3-year bachelor's degree (180 ECTS) or equivalent qualifications in Biomedicine. An additional requirement is specialization in biomedical topics (e.g biochemistry, bioinformatics, cell-and molecular biology, human physiology, immunology, microbiology and pharmacology) worth a minimum of 80 ECTS. To qualify for admission students will also have to document completed practical laboratory courses in biochemistry, cell and/or molecular biology comprising a minimum of 100 hours.

There are also other general requirements for admission, and you will find more information on admission requirements in the following link: General admission requirements - Master

Applicants with a degree in Biomedical laboratory sciences ("Bioingeniør") must have their degree recognized as equivalent to a Norwegian degree in laboratory sciences by NOKUT. Applicants also need authorization with the Norwegian authorization board as a qualified Bioingeniør. It is also recommended that students with a degree in Biomedical laboratory sciences have an additional 20 credits with specialization in biomedical topics.

Bachelor of Pharmacy, Medicine or Dentistry does not fulfil the admission requirements.

Applicants from Norway or Nordic countries:

The application deadline for Norwegian and other Nordic applicants is 15th of April for admission to the autumn semester. Online application, study code 3037.

Applicants from outside the Nordic countries:

The application deadline for self-financing applicants is 1st of December for admission to the autumn semester. Online application, study code 2015. Read more here.

The study programme's Learning Outcome

When you have completed the Master programme in biomedicine, you are expected to have advanced and comprehensive knowledge of biomedical methodology, theories, concepts and scientific approaches specified by the following learning outcomes:

As a Master in Biomedicine the candidate…

Knowledge

- can explain current scientific theories and methods in biomedicine
- can discuss the theoretical background, including strengths and weaknesses/ shortcomings, of advanced laboratory techniques and methods used in a chosen scientific discipline within biomedicine, based on the candidate´s own research
- can apply acquired knowledge in new areas within biomedicine
- can analyze professional issues, based on the history and traditions of biomedicine and its place in society

Skills

- can analyze and assess different information sources in a critical manner and use these to structure and enunciate professional reasoning
- can analyze existing theories and interpretations in biomedicine and work independently with theoretical and practical problem solving
- can choose and perform relevant methods to solve specific problems in biomedical research
- can design and execute controlled experiments to address specific research questions within the field
- perform an independent research project in biomedicine under guidance and in accordance with recognized norms in research ethics

General proficiency

- can analyze relevant issues connected with professional ethics and research ethics in biomedicine
- can apply knowledge and skills in biomedical theory and methods in new areas in order to implement advanced work tasks and projects
- can communicate her/his own scientific work both orally and in writing, using the relevant scientific language
- can communicate about professional issues, analyses and conclusions with specialists in the field and to the community in general
- can contribute to innovation processes in biomedicine

Academic content and description of the study programme

The Master's programme in Biomedicine is a full-time study programme on-campus in Tromsø. The courses available in the programme, and the programme structure is shown in table 1. The course descriptions are available in the online course catalog.

Table 1. Programme structure for master in biomedicine.

Term	Courses
First semester (autumn)	MBI-3012 Advanced methods in experimental biomedicine (30 ECTS)
Second semester (spring)	Elective courses (30 ECTS) • MBI-3004 The biology of cancer (10 ECTS) • MBI-3013 Human molecular genetics: medical and forensic genetics (10 ECTS) • MBI-3014 Infection, inflammation and immunity (10 ECTS) • MBI-3015 Human pharmacology and toxicology (10 ECTS) • MBI-3016 Human physiology (10 ECTS) • BIO-3323 Bioinformatics: Genomes and genomics (10 ECTS) Norwegian students can choose to study abroad this semester (30 ECTS)
Second year (third and fourth semester)	MBI-3911 Master thesis (60 ECTS)

The programme will shed light on contemporary problems and methods in biomedicine. Students will be trained in experimental work, as well as written and oral presentations of independent scientific papers.

The first semester the students will attend the mandatory course MBI-3012 Advanced methods in experimental biomedicine, where they will be trained in cell culturing, detection and expression of DNA, RNA and proteins, imaging, electron microscopy, histological analysis and immunohistochemistry. Students will also learn health and safety procedures in laboratories, how to cite correctly and get an introduction to innovation. Students must pass this course in order to start working on the master project.

In the second semester, students will attend three elective courses where they will specialize in various areas of biomedicine.

In the second year, students will become a member of a research group working with their master project under supervision alongside our researchers. We offer an international research-environment with researchers from all corners of the world. The specialization is chosen according to the project the student choose to work with. The Master's thesis is expected to be an independent body of scientific work performed and presented by each student.

Learning activities

Course activities consist of different teaching methods. Lectures will give the students an overview of the scientific field and deeper knowledge of selected areas of biomedicine. At seminars students will analyse, discuss, and put their knowledge into relevant contexts. The laboratory exercises will train practical skills, understanding and applications of methods and technology for use in experimental design. During group work students are allowed to discuss subjects for deeper understanding. In the individual tasks, students will use scientific literature to present scientific work orally and in writing. Students will obtain supervision and individual guidance in laboratory practice and scientific writing. Students are also expected to perform independent studies, including curriculum not specified in the scheduled teaching.

Examination and assessment

Students will be assessed by course work requirements and examinations. Course work requirements must be approved in order to qualify for examination. Examination methods will vary between courses, and will in general be written exams, home exams (writing tasks), and oral exams. Exams will be evaluated with letter grades (A-F) or pass / fail.

Requirements for participation

Students can have an authorized absence of up to 20% on mandatory teaching. If a student has authorized absence he/she has the responsibility to acquire knowledge, skills and attitudes as described in the learning objectives. Students are required to report all absence to the student advisor as soon as possible, and a medical certificate must be provided.

Qualifications for examination

Coursework requirements must be approved in order to attend exams.

Re-sit exams/postponed exams will be arranged early in the following semester, for candidates who failed the exam, or who, for valid reasons, were unable to attend. Information regarding re-sit exams and postponed exams is given in the course descriptions, and may vary for the different courses. For more information see regulations for examinations at UiT The arctic university of Norway § 21.

The study programme's relevance

After completing the programme, the candidate will be prepared for exciting assignments of research and method development in business, management and research-oriented institutions where the demands for qualified professionals are increasing.

Career options may include; molecular diagnostics, medical research, fisheries, food processing, public administration, educational institutions at all levels, the pharmaceutical industry, private research and innovation enterprises, technical positions at universities, hospitals and other laboratories.

Work scope

The scope of work expected for one full year of studies, is considered to be between 1500-1800 work hours. Students must expect to work approx. 40 hours a week to achieve the objectives for the programme. This includes lectures, labwork, groupwork etc. as well as well as self-study. More information regarding work scope can be found in the quality assurance system part 5, chapter 1.

For master's thesis/independent work in master's thesis

In order to start work on the master thesis students must have passed the mandatory course MBI-3012 Advanced methods in experimental biomedicine (30 ECTS). Students will be working in one of our research groups with a given task. The master thesis is an individual project. The master thesis has a scope of 60 ECTS, and a timeframe of one year. Students will have individual supervision during their project. The assessment for the course is given on the Master's thesis, and students must also present their work to an exam committee, in addition to an oral examination. For more information, we encourage students to read the

Supplementary regulations for master's degrees at the Department of Medical Biology, Faculty of Health Science, which was approved by the Teaching Committee of the Department 11th of January 2011.

After completing the Master thesis, the student should be able to define a scientific problem and to point out an approach to a solution. The student should be able to collect knowledge from the literature and explain the background for the problem, work through selected methods and analyze the results. Students should be able to discuss obtained results in relation to other findings and draw conclusions, and present his/her scientific work in a thesis and an oral presentation.

Language of instruction

Language of instruction for the programme, and the courses included in the programme, is English. Students are expected to write their master thesis in English.

Internationalization

The study programme as a whole is taught in English and admits both Norwegian and international students. All courses are taught in English, and use international literature. In this way, students will come into contact with the latest research in the original language. Students will conduct their thesis work in one of our research groups consisting of international environments, and the students will be therefore become better equipped for an international professional career.

The structure of the programme allows the Norwegian students to take the second semester at other universities. For more information, see the section for Student exchange.

Master students can also apply for financial support to attend relevant international meetings, courses or conferences.

Student exchange

The second semester consist of recommended elective courses. It is also possible to spend a semester abroad as an exchange student. UiT and the Department of medical biology have exchange agreements open for master students in biomedicine. Exchange is not optional for international students enrolled in the master programme.

Master in Biomedicine has the following exchange agreements:

- University of Naples 'Federico II' (Italy)
- University of Navarra (Spain)
- Utrecht University (the Netherlands)

There are other options with study abroad agreement between UiT and other institutions than those listed. The student advisor for the master programme can provide more information regarding both exchange agreements and study abroad agreements.

Administrative and academic responsibility

The Department of Medical Biology at the Faculty of Health Sciences has the administrative responsibility for the programme. The Programme Board has the academic responsibility. The Programme Board consist of

the course leaders, a student representative, the Deputy Head of Department – Head of studies, and the student advisor as the secretary.

Quality assurance

The Programme Board has the responsibility to determine the structure of the programme and evaluate the content and courses of the programme. The evaluation is based on:

- Evaluation meeting with the Programme Coordinator, the student representatives from each year group and the student advisor. This meeting take place once a semester and in the middle of the semester. Thus giving the opportunity to do small changes in the semester.
- The National Student Survey (Studiebarometeret), which the second year students answer each year.
- Yearly evaluation of the courses with feedback from the students and teachers.
- External evaluation is also used to evaluate the programme.

Other regulations

For a more descriptive regulations for the master's programme, we refer to "Supplementary regulations for master's degrees (120 credits) at the Department of Medical Biology, Faculty of Health Sciences," which was approved by the Teaching Committee of the department 11th of January 2011.